

REMARKS

The Office action mailed September 2, 2005, has been received and its contents carefully noted. The pending claims are claims 1-12. Claims 1-12 were rejected. By this Response, claim 7 has been amended. Claims 1-6 and 8-11 have been canceled. No statutory new matter has been added. Therefore, reconsideration and entry of the claims as amended are respectfully requested.

Rejection under 35 U.S.C. 103(a)

The Examiner rejected claims 1-12 under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in the specification in view of either JP360208869A or JP404234178A and further in view of JP02001358188A. Specifically, the Examiner indicated that semiconductor manufacturing processes comprising dividing a wafer are known in the art and that it would have been obvious to use a resin layer and a protective film and remove the resin material according to JP360208869A, JP404234178A and JP02001358188A.

One of the important features of the present invention is that a water-soluble liquid resin is used as the liquid resin for producing the protective film on the workpiece. Use of such a liquid resin simplifies application of the resin to the surface of the wafer, and simplifies removal of the hardened resin because it is water-soluble. It is washed away easily during an after-treatment period. As a result, both formation and removal of a protective film are carried out readily and efficiently.

According to Applicant, JP360208669A discloses a method of manufacturing a photovoltaic element comprising depositing a semiconductor layer 2 on a stainless steel substrate 1 and a transparent conductive film 3 on the semiconductor layer 2. Then, a surface protective resin film 4, such as an epoxy resin or the like, is applied onto the semiconductor layer 2 by a screen printing method or the like. When the substrate 1 is cut by a laser beam 5, the surface protective resin film 4 melts and coats a side surface of the cut substrate 1 to form a resin coated

layer 6 thereon. This resin coated layer prevents intrusions of moisture and the like into the interfacial portion between the stainless steel substrate 2 and the semiconductor layer 2.

As clear from above, the protective resin film 4 and the resin coated layer 6 of the cited reference JP360208869A prevent the intrusion of steam, moisture and the like and hence, they are not water-soluble and are not removable simply by being washed away by water. This is wholly unlike the protective film in Applicant's invention.

Applicant understands JP404234178A to disclose a method for manufacturing a photovoltaic element where a resin layer 3, a photoelectric conversion element composed of a transparent electrode 4, a semiconductor film 5, a back electrode 6, and a protective resin layer 7 are formed on a support board 1. Thereafter a laser beam 20 cuts the resin layer 3, the photoelectric conversion element, and the protective resin layer 7. This results in coating of the cut surfaces with the protective resin layer 7 made molten by the beam 20. As the cut surfaces are thus coated with the resin layer 7, intrusion of moisture and the like into the interfacial portion between the transparent electrode 4 and the semiconductor film 5 is prevented. Accordingly, like the case of JP360208869A described above, the protective resin layer is taught as not water-soluble. It cannot be washed away simply by water.

Applicant views JP2001358188A as disclosing a defective chip excluding unit of a semiconductor integrated circuit. As shown Fig. 2 thereof, a thin film sheet 6 is affixed onto a surface protective layer 8, a connection electrode 9, and wiring 10. Laser beam 2 severs defective semiconductor chips from the wafer. This involves severing the electrical connection of each defective chip from the adjoining normal semiconductor chips. The thin film sheet 6 is peeled off from the semiconductor wafer 7 after cutting away surrounding defective chips, so that chippings 11 on the thin film sheet 6 can be removed from the wafer 7. Therefore, although the role of thin film sheet 6 as a protective film to protect the chips from chippings 11 is common to that of the present invention, the thin film sheet 6 in this citation is not taught or suggested as water-soluble, and therefore is not taught or suggested as being washed away with water.

As described above, each of the above three cited documents is very different from the claimed invention in that the protective films used in the cited art are not water-soluble. Since none of the cited prior art, alone or in combination, teaches or suggests that the liquid resin is water soluble, the claimed invention is unobvious.

Therefore, Applicant respectfully submits that the claims, as amended, are unobvious and the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

Request for Interview

Applicant respectfully requests either a telephonic or an in-person interview should there be any remaining issues.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300**, Attorney Docket No. **033773M056**.

Respectfully submitted,
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